

WHAT IS CLAIMED IS:

1. A bipolar transistor (BJT) with reduced base-collector capacitance comprising
5 an extrinsic base, and
a lateral trench beneath the extrinsic base.
2. A BJT of claim 1, wherein the trench is filled with air.
3. A BJT of claim 1, wherein the trench is filled with an insulator.
4. A BJT of claim 3, wherein the insulator is a high step coverable
10 insulating material.
5. A BJT of claim 4 wherein the insulator is PETEOS.
6. A BJT of claim 1, wherein the trench has a $\langle 110 \rangle$ orientation.
7. A BJT of claim 6, wherein the trench is formed in a $\langle 100 \rangle$ silicon wafer.
- 15 8. A method of forming a laterally extending trench in a semiconductor material underneath an extrinsic base of a BJT, comprising
choosing a predetermined crystal orientation,
etching a vertically extending STI region next to the extrinsic
base, and
20 using an anisotropic etchant to etch the laterally extending
trench to extend laterally from the STI.
9. A method of claim 8, wherein choosing the crystal orientation includes
choosing a wafer with a $\langle 100 \rangle$ orientation.
10. A method of claim 8, wherein the choosing of the crystal orientation
25 includes choosing a lateral trench direction that is in the $\langle 110 \rangle$ direction.
11. A method of claim 10, wherein the semiconductor material is silicon.
12. A method of claim 11, wherein the etchant is a wet anisotropic silicon etchant.
13. A method of claim 12, wherein the etchant includes KOH.

14. A method of claim 13, wherein the etchant further includes alcohol and water.
15. A method of claim 12, wherein the etchant includes TMAH.

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